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SESSION ID: APP-T01

The Next Twenty Years: What AppSec Needs to Do to Cement the Future

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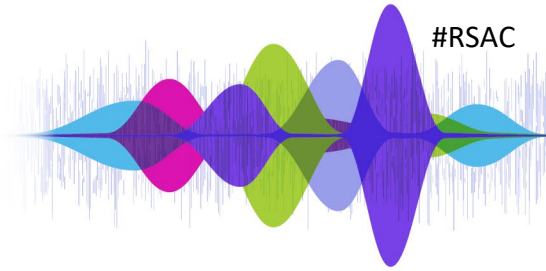

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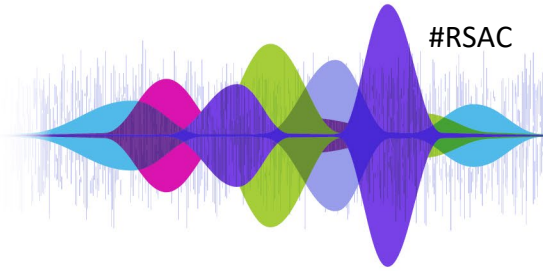
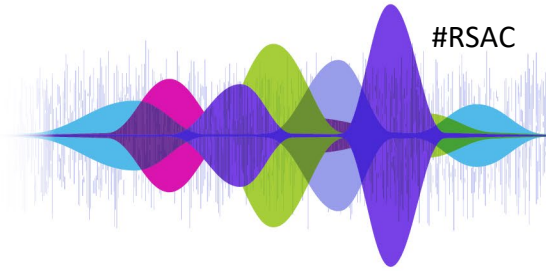
Agenda



- The current state of AppSec
- An AppSec postmortem
- A {scary?} future for AppSec
- The next three years



AppSec is dead, or is this the golden age of AppSec?

OWASP SINCE THE DAWN OF TIME (2003)

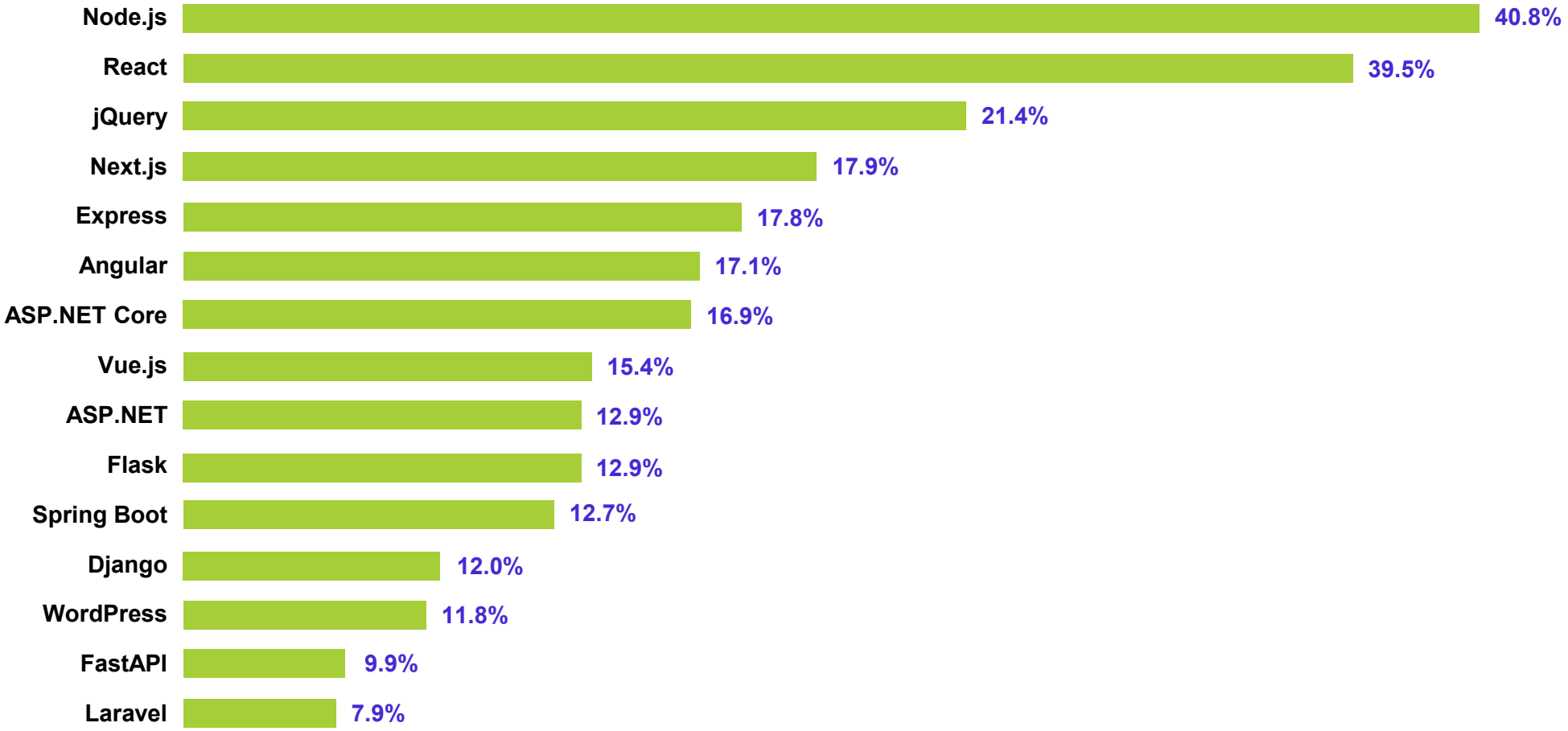
The language

1	Python	18.04%
2	C++	10.04%
3	C	9.17%
4	Java	9.16%
5	C#	6.39%
6	JavaScript	3.91%
7	SQL	2.21%
8	Visual Basic	2.18%
9	Go	2.03%
10	Fortran	1.79%

11	MATLAB	1.72%
12	Delphi/Object Pascal	1.63%
13	PHP	1.46%
14	Rust	1.28%
15	Ruby	1.28%
16	Swift	1.28%
17	Assembly Language	1.21%
18	Kotlin	1.13%
19	R	1.11%
20	Scratch	1.09%

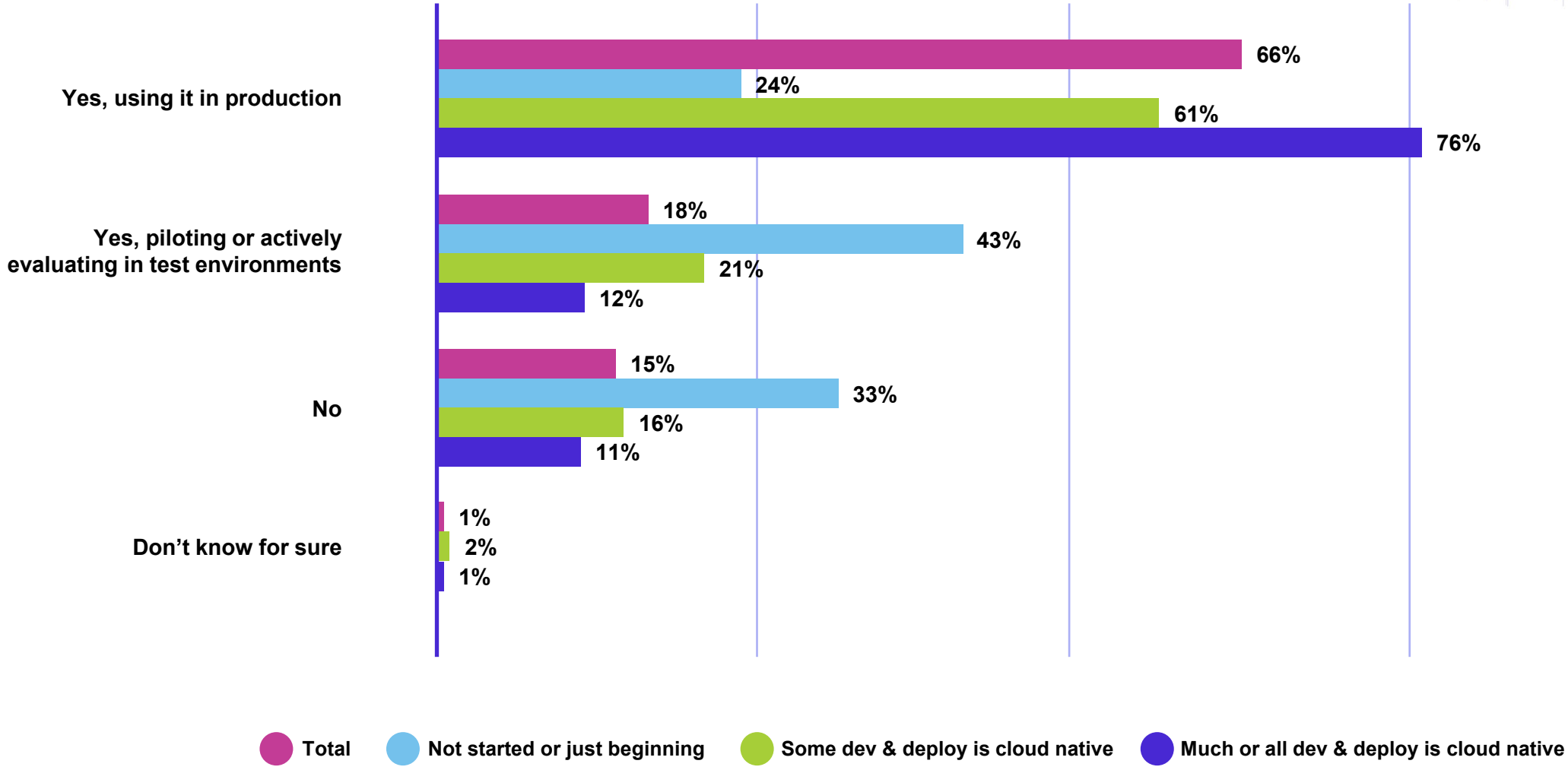
Source: https://www.tiobe.com/tiobe-index/, September 2024 data

Top web frameworks by usage



Source: https://www.statista.com/statistics/1124699/worldwide-developer-survey-most-used-frameworks-web

Cloud native adoption

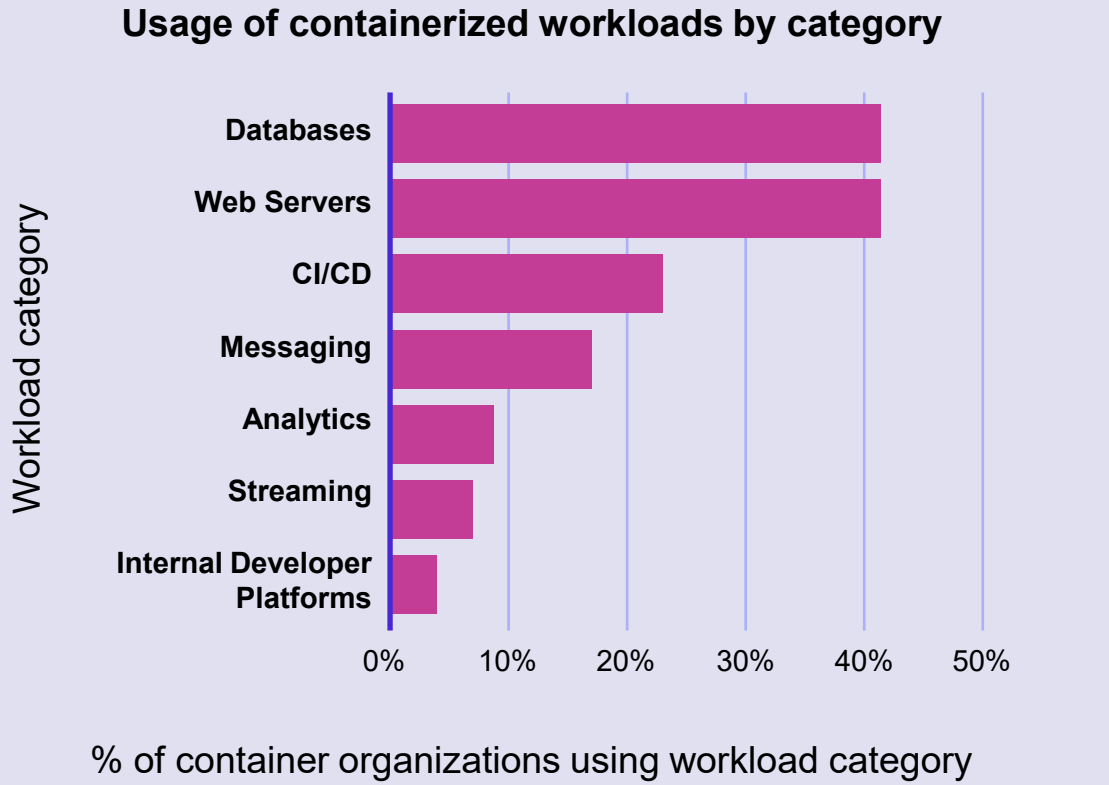


Source: https://www.cncf.io/reports/cncf-annual-survey-2023

Containerization

Databases and web servers are the leading workload categories for containers

Source: Datadog



Cloud complexity

23%
Have more than 100 cloud accounts

90%
Use multiple cloud providers

Source: https://www.firefly.ai/state-of-iac-report-2024, https://explodingtopics.com/blog/cloud-computing-stats

Agile and DevOps are normal

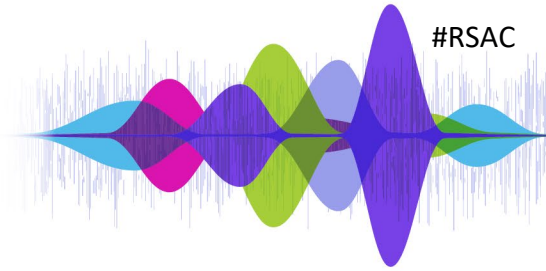
83%

report using DevOps practices within their organizations.

71%

report using Agile practices.

Source: https://www.strongdm.com/blog/devops-statistics



Application summary

A plethora of languages, with new languages introduced yearly.

Diversification of web frameworks.

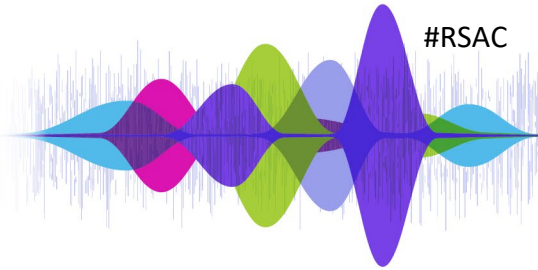
Cloud native is the new normal.

Everything runs in a container.

Cloud complexity across multiple providers.

Agile and DevOps are everywhere.

The state of AppSec



1. Issue density vs. tool fidelity.
2. The hamster wheel of scan and fix or a lack of secure by design/default.
3. Reachability and exploitability of vulnerabilities.
4. Lack of connection with operations.
5. Threat and risk expansion:
   - OWASP Top Ten (Web App 2021{5}, API 2023, CI/CD, LLM))

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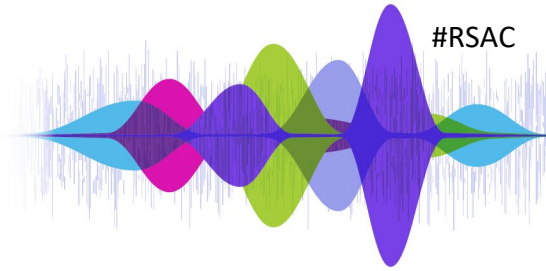
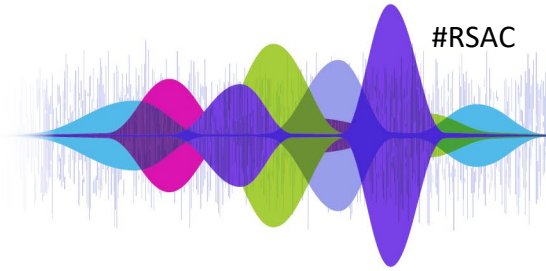
The AppSec Postmortem



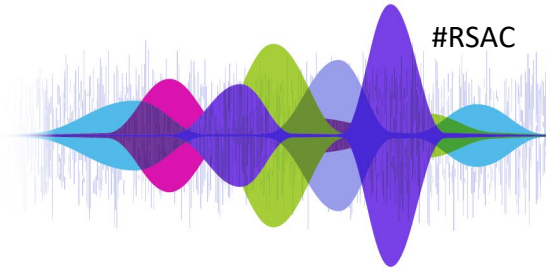
#1

Lack of a badge.

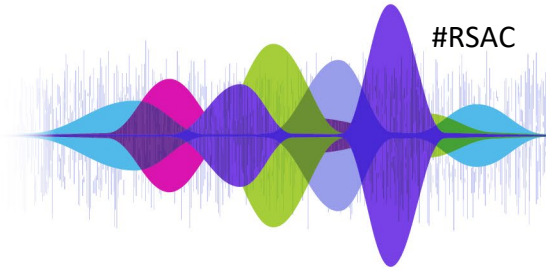


#2

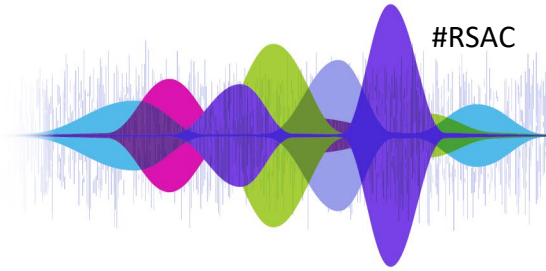
Overhyped.



Missed the window?

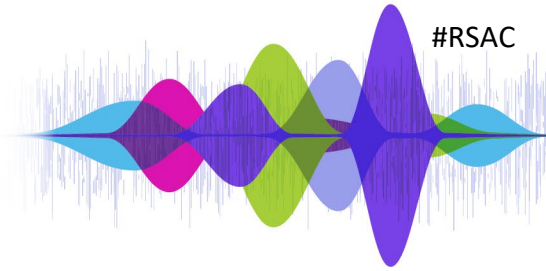


Education takes ten years to pay off.



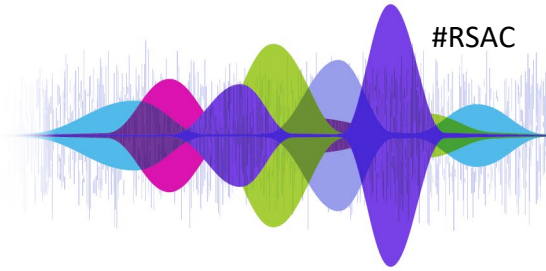
#5

Over-reliance on red.

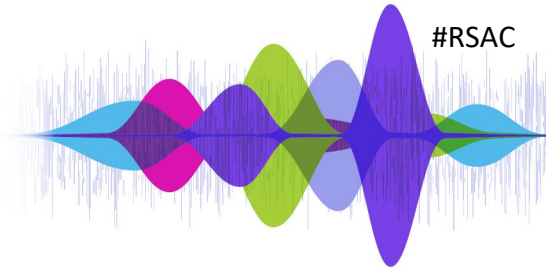


#6

OWASP and Commercialization.

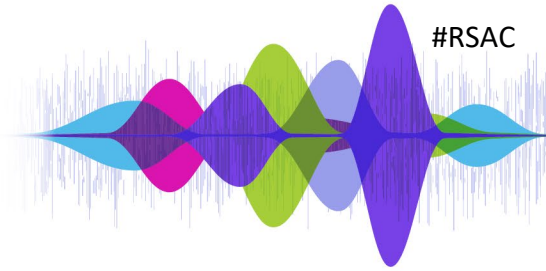


Provenance or lack thereof.



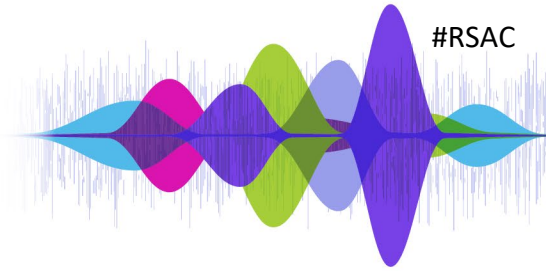
#8

Government lag.



#9

Good enough.



Driving slowly in the fast lane.

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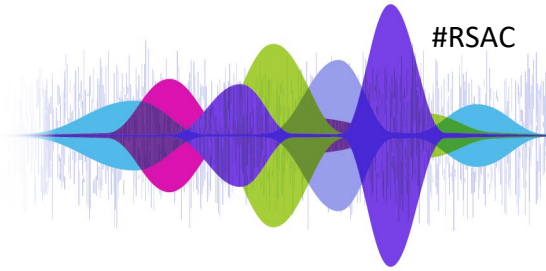
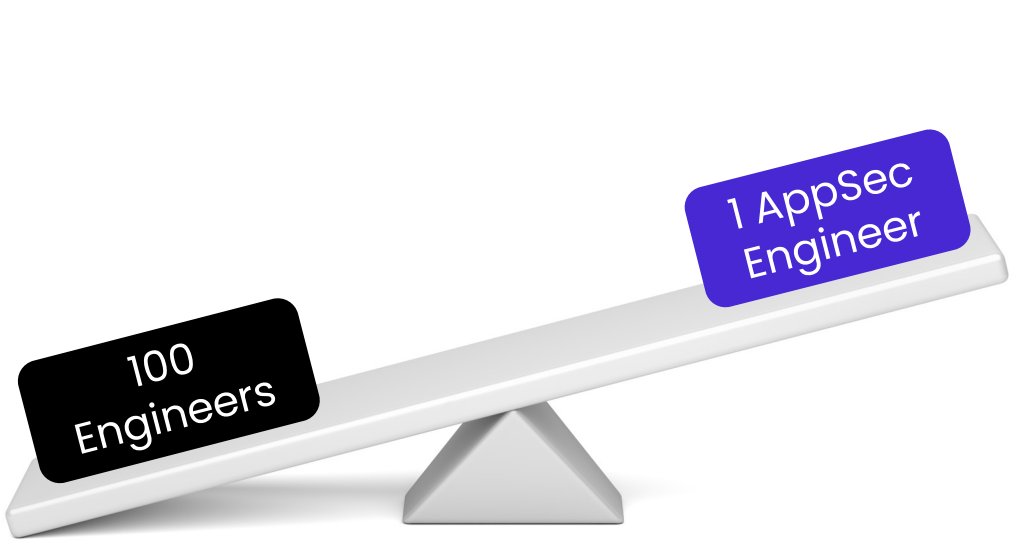
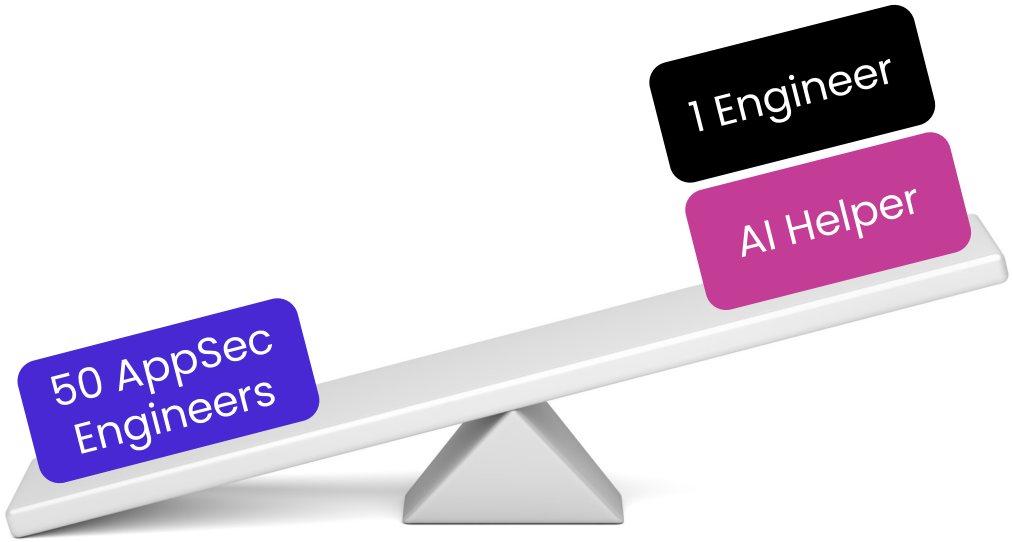
A brighter AppSec future (or what you can expect from the future)



Reducing complexity is the primary motivator of the AppSec future.

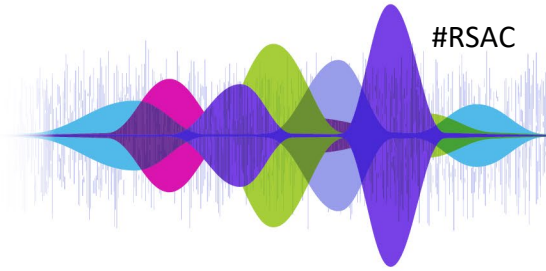


Today



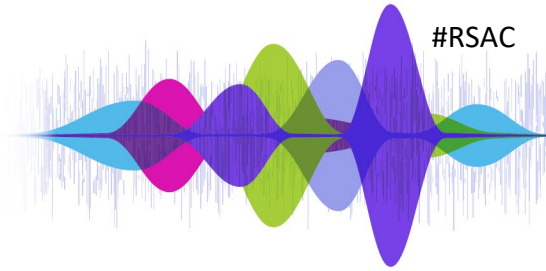
Future

Source: Kyle Kelly, https://www.linkedin.com/in/kylek42



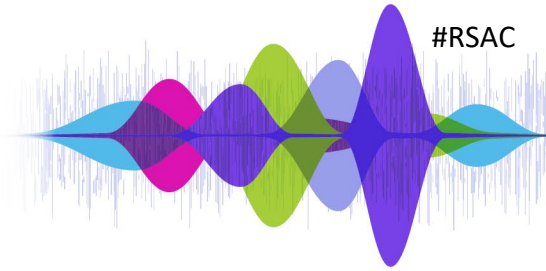
#1

AppSec is engulfed by Engineering. Engineer includes {software, AppSec}.



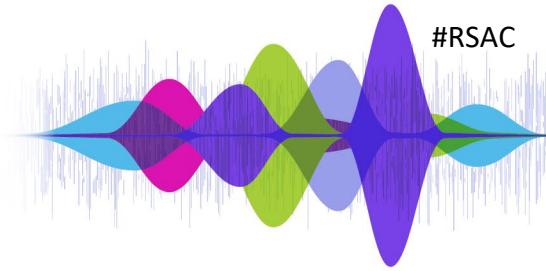
#2

Languages and frameworks built on robust security and privacy will thrive, while outdated ones fade into obscurity.



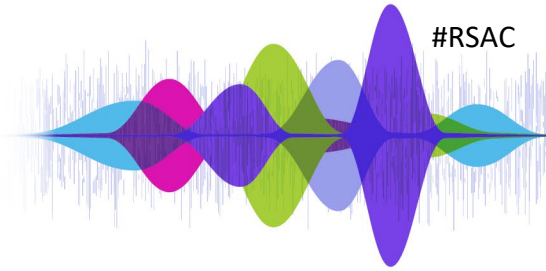
#3

A true “shift” from security tooling identifying problems to fixing problems and the death of legacy tools (SAST, DAST, SCA, WAF, etc.)



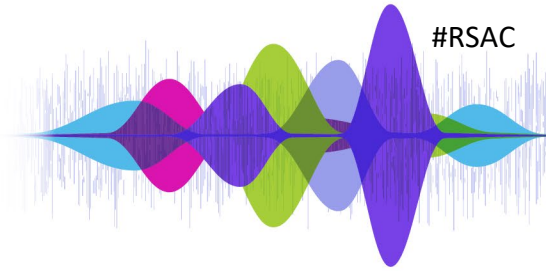
#4

The robots will rise, and AI agents will write software and design hardware entirely.



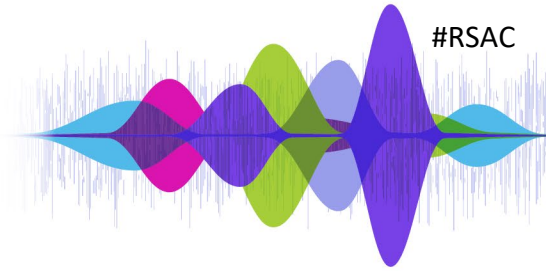
#5

The cloud will be ubiquitous and completely abstract, and the AI agents will interact directly.



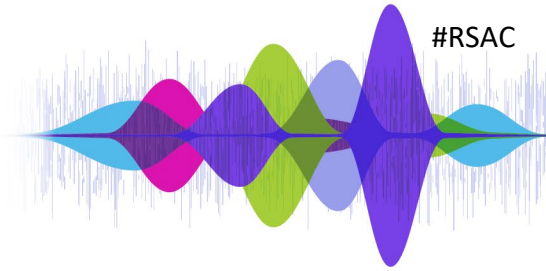
#6

Great trust will be placed in things that Engineering doesn’t understand.



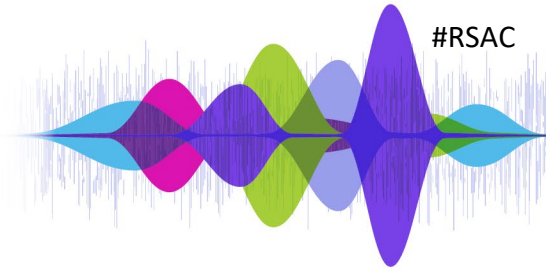
#7

Security becomes compliance only and focuses on inspections.



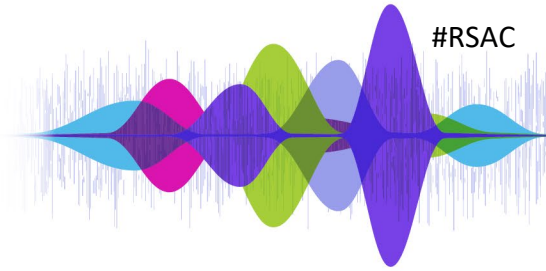
#8

Legally tested liability and warranty coverage for software and hardware purchasers becomes the standard.



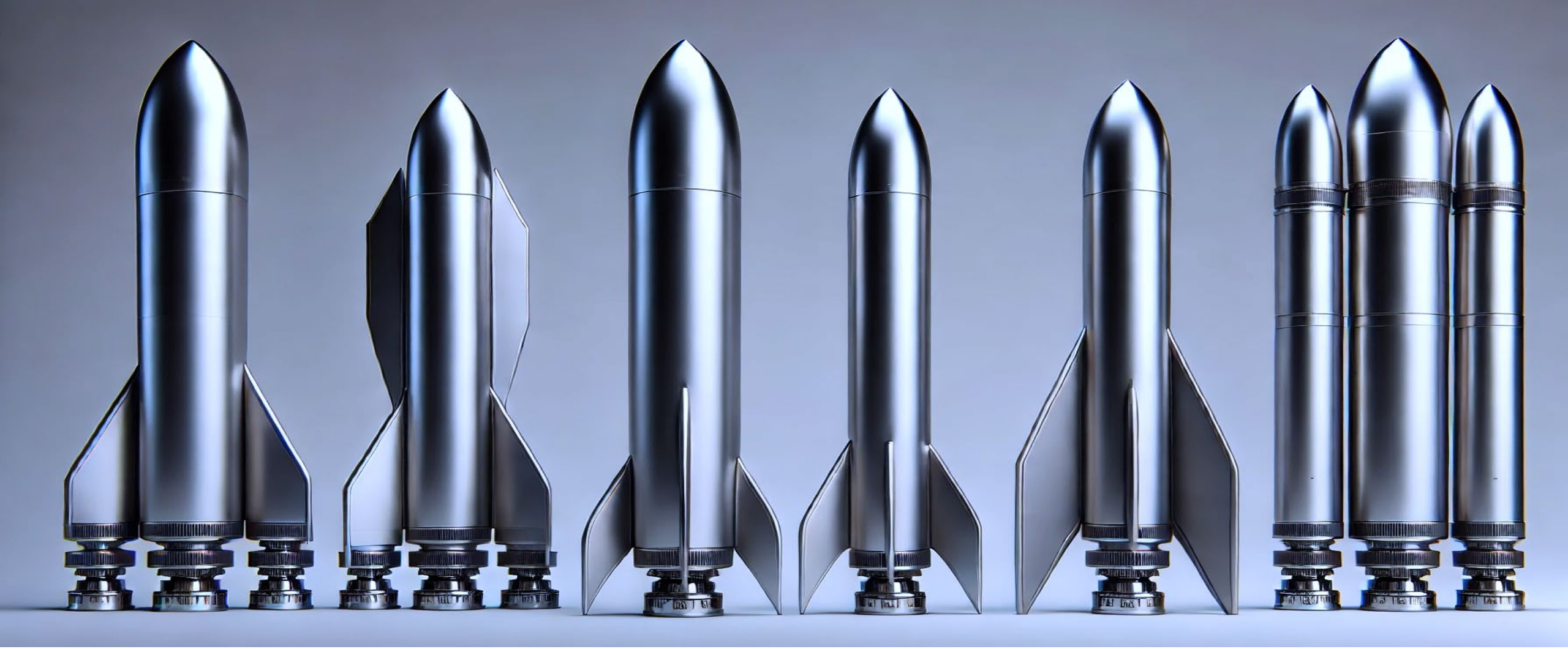
#9

Engineers graduate from the university system with a solid foundation of security and privacy.

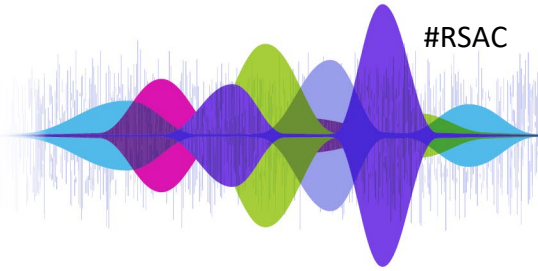


#10

Governments worldwide impose strict regulations and oversight on the development of software and hardware using AI.



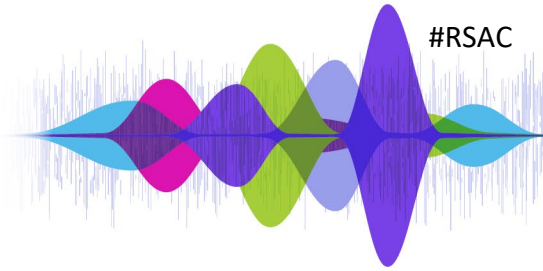
Are you scared yet?



What can we do to protect the future?

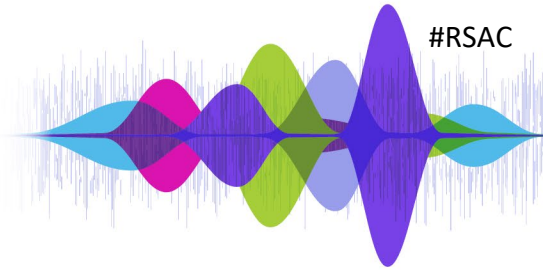
- Solving the trust problem with AI is crucial.
- Industry partnerships with the government must be made for realistic security and privacy controls.
- The Three Laws of Robotics (Asimov, 1942) must be the foundation for the AI takeover of Engineering.
  - “A robot may not injure a human being or, through inaction, allow a human being to come to harm.”
  - “A robot must obey the orders given it by human beings, except where such orders would conflict with the First Law.”
  - “A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.”
- We must introduce a layer of transparent observability outside the control of the AI.

The next one to three years



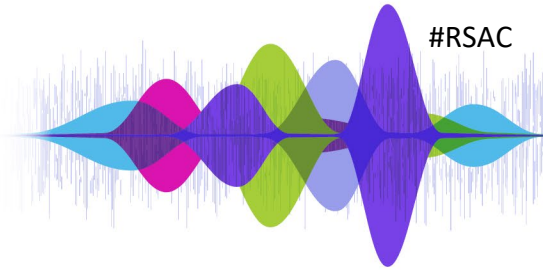
- Build a stronger alliance with your engineering team and proactively prepare to integrate with them as a seamless part of their processes.
- Move beyond dismissing AI as hype; invest in understanding its foundations, mechanics, and practical uses.
- Continuously evaluate emerging AI-powered security tools, positioning your program to adopt them effectively at the right time.
- Continue investing in your current legacy technologies until 2027 while formulating and executing an organized decommissioning strategy.
- Acknowledge that AppSec is in its ‘golden age’ today but anticipate significant changes within the next three years.

Apply what you have learned



- **Month 1:**
  - Ponder where your AppSec role or program fits against the post- mortem. Are you better off or worse?
- **Month 2:**
  - Think deeply about how AI will impact your future and how you can get involved now to help solve the trust and Government challenges.
- **Month 3:**
  - Take a vacation, because the AI overlords may have already taken over the writing of code and security functions.

Key takeaways



- Modern applications are complex and have many moving parts, complicating security and privacy.
- Application security has some issues.
- The postmortem highlighted challenges to AppSec from the past, but all can be overcome.
- The future is AI, and we can shape the future, but that train is already leaving the station, so get onboard.

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Questions?

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